

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (currently amended): A container having a heterogeneous structure, comprising a material with a barrier effect and a polymer material, wherein the material with a barrier effect is an amorphous carbon material with a polymer tendency which is applied as a coating on a substrate made of the polymer material, said amorphous carbon material with a polymer tendency contains CH, CH<sup>2</sup> and CH<sup>3</sup> bonds in the proportions of 25, 60 and 15, respectively, and the proportions of the electronic states sp<sup>3</sup>, sp<sup>2</sup> and sp are 53, 45 and 2, respectively.
2. (previously presented): A container as claimed in claim 1, wherein the material with a barrier effect is a nano-composite comprising amorphous carbon with a polymer tendency.
3. (previously presented): A container as claimed in claim 2, wherein the material with a barrier effect is a nano-composite comprising an amorphous carbon with a polymer tendency and metal atoms.
4. (previously presented): A container as claimed in claim 1, wherein the coating of material with the barrier effect is less than about 300 Å thick.
5. (previously presented): A container as claimed in claim 4, wherein the coating of material with a barrier effect is between 50 and 1500 Å thick.
6. (previously presented): A container as claimed in claim 1, wherein the polymer material is a polyolefin.

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7. (previously presented): A container as claimed in claim 1, wherein the coating of material with a barrier effect is applied to the substrate inside the container.

8. (previously presented): A container as claimed in claim 1, wherein the coating of material with a barrier effect is applied to the substrate on the exterior of the container.

9-24 (canceled).

25. (previously presented): A container as claimed in claim 1, wherein the container is a bottle or flask.

26. (previously presented): A container as claimed in claim 1, wherein the polymer material is a polyester.

27. (previously presented): A container as claimed in claim 26, wherein the polyester is PET.

28. (previously presented): A container as claimed in claim 26, wherein the polyester is PEN.

29. (previously presented): A container as claimed in claim 1, wherein the material with a barrier effect is applied as a coating on the inner face of said substrate made of the polymer material.